

## ROUNDTABLE I - AIRPORT NOISE

Chairman: Robert E. Pendley  
Douglas Aircraft Company

David Heal, Airport Manager, Westchester County Airport: Westchester County Airport is primarily a general aviation, small-air-carrier facility located 40 miles north of New York City. We have three Air Florida 737 departures a day, as well as 25 departures per day by commuter-type aircraft. There are more than 400 aircraft based at Westchester, and over 100 of these are corporate jets. We have the largest concentration of corporate jets of any airport in the world. The area surrounding the airport is primarily a very high class, expensive residential area, and this is the area that our aircraft overfly.

We live, breathe, and may be destroyed by the issue of noise. Everything we do at the airport is controlled by noise. If we fill a pothole on an access road, someone in the neighborhood will complain that we're improving the character of the airport, making it more attractive to users. The problem at Westchester is not one of money; last year we generated \$1 million in profit which was returned to the county. The problem is not one of technology; we believe that the technology is out in the field and is available. Our problem is the public's perception of the role of the airport and what might be considered to be reasonable noise exposure limits within the community. The problem is also an apparent lack of assistance, until recently, from the Federal government in terms of doing anything that is constructive or really helpful in assisting us.

The corporate jet users at our airports are gradually changing to the new generation of quieter aircraft engines. However, there are still a great many of the first-generation turbojet-type aircraft here (i.e., the early Lear jets, Jetstar 1, etc.). One of our biggest problems is with Grumman's and Gulfstream American's latest generation of aircraft, which is the G2 and G3 series. Powered by the Spey jet engine, these aircraft generate the largest percentage of our noise. We have 28 G2's and G3's based at our airport, and their comings and goings are creating a tremendous problem for us. We are fortunate to have had the assistance of the FAA, AOPA, NBAA, and other user groups to work with us in the community to try to develop a noise abatement program and alternative flight tracks. They have been very constructive and have done about as much as they can.

This is where we move into the question of public perceptions. We are optimistic that further steps can be taken. In dealing with local groups, we have found that because of the resultant political and community exposure, the individual corporations will not stand up alone and say "we support the airport." Instead they have gathered together in the form of a local airport support group, or have joined a national organization such as the AOPA or NBAA. These groups are the only effective means we have of dealing with the various users. Such groups, however, are usually divided by the business, airline, and private interests of the various members. As a result they are easily fractured and

defeated. If the aviation community is to move progressively into the future, the various aviation specialty groups must come together and resolve their basic differences.

E. H. Haupt, National Business Aircraft Association: The NBAA represents over 2600 corporate members of the general aviation community. In corporate aviation, we see more "noise restricted" airports emerging because nearby communities have become sensitive to aircraft sounds. It is a problem evident today at all classes of airports. At the large hub airports, the air carrier aircraft usually produce the greatest volume of sound. At general aviation fields, the business aircraft can be the noise maker, and if the surrounding community is noise sensitive around a small non-hub field, the Cessna 172 may be the problem. Some elements of the aviation industry do not consider noise to be a problem, and therefore aviation as an industry does not always approach aircraft sound levels as a problem.

NBAA looks at the airport as the proverbial three-legged stool. The airport sits on top of three legs: the users-pilots are one leg, airport management is another leg, and the surrounding community is the third leg. If any of these elements (legs) do not function or do not understand the nature of the noise problem, then the airport does not operate at maximum efficiency. The airport users need to understand the effect aircraft noise has on people in the community and to use noise abatement techniques at all times. Communities need to understand the value of the aircraft and the airport. This educational process does not produce immediate results but must be continued to insure airport survival.

We found that aircraft noise problems at airports follow a pattern. The scenario usually begins with a community group formed as an anti-airport noise force. Next the pro-airport group (friends of the airport, pilots, etc.) is either newly formed or an existing group activated for the noise issue. If both sides can sit and talk with each other in a rational manner, then solutions do occur. If both sides have become so polarized that negotiations are not possible, the issue then goes to court. When this happens, we in aviation have lost. The users, communities, and airport managers need to work together for a better understanding of the noise problem.

James E. Densmore, Federal Aviation Administration: A speech was made by the Administrator of the FAA (Helms) at the University Air Law Symposium that contained significant policy related to the subject of this workshop. Mr. Helms spoke on the constraints that aircraft noise is imposing on our aircraft transportation system. If allowed to continue, the trend in airport use restrictions such as curfews could cripple our air transportation system and stifle this nation's continued economic development. Despite considerable technological progress in aircraft source noise reduction, the political ramifications of the noise problem have become more intense. Local airport authorities are under increasing pressure and the most expedient measures that keep surfacing are curfews and operational restrictions. It is a matter of considerable concern, because airports are a near-finite resource and it is

essential that we squeeze all the capacity out of the airport system that we can. The needed future capacity cannot be provided if we permit noise use restrictions to go unchallenged. Because of the ripple effect, use restrictions such as curfews are not a matter of purely local concern. They not only harm the local economy, but also have an adverse impact at the national level. This administration recognizes that airports are vital national assets and intends to protect them from unreasonable assault. Our first perimeter of protection will involve an attempt to intervene positively when such restrictions appear. This is exactly what we are doing at Westchester County Airport. The second mechanism is litigation; in the past, the United States Government usually waited until a private party initiated an action before even considering involvement. That will no longer be our posture. Our legal considerations include no undue burden on commerce, safe and efficient use of airports, no unreasonable discrimination, and recognition of the terms of federal airport grants. Third, the FAA is drafting legislation that would continue to allow local authorities to propose terms they deem acceptable for the operation of an airport. However, the legislation would require FAA review and approval prior to implementation. Under the bill being drafted, the FAA would consider national consequences and determine if the benefits to the national users would be greater than the costs to local residents. If so, a proposed restriction would not be approved. The FAA would propose the acceptance of the economic consequences of such a judgment, that is, become liable for the incremental difference between a reasonable local viewpoint and a truly national perspective. Thus, we regard airports to be a vital national asset, and we will take whatever steps are necessary to protect them, hopefully with positive interaction with local authorities. If necessary, we will use available legal mechanisms to protect these national assets and in the long term we intend to implement a system which places the initiative with the localities but which provides the FAA with the means to reflect national needs.

Considering these important policy statements and their implementation, we would put particular emphasis on research on time-of-day noise events and also on the effects of ambient noise level on the response to aircraft noise. We are working with the NASA Langley staff to further evolve such research.

Major Richard Woodworth, United States Air Force, Pentagon: I am from the Environmental Division in the Pentagon. Among other things, this Division is responsible for developing policy and guidelines for quantifying and analyzing the noise environment around our air bases and for establishing requirements for considering the noise environment in air base development planning.

To address the first question presented in the invitation to this workshop: Yes, there is an airport/community noise problem. From the Air Force perspective there is less of a problem now than there was 10 years ago. This is primarily because of extensive efforts to identify and mitigate noise impacts. Ten years ago we were very concerned with encroachment of private development on our airfields. We developed the Air Installation Compatible Use Zone (AICUZ) Program, which combined safety considerations and a quantification of noise

levels associated with our flying activities. The noise level values were produced using the NOISEMAP computer program, which considers aircraft operations (aircraft type, flight profile, power settings, time of day of the flight, etc.) and aircraft engine run-ups. These noise level values are used to help both Air Force and local community planners determine land uses that are compatible with the Air Force mission. Implementation of the AICUZ Program recommendations by local governments during the past 10 years has helped control air base encroachment by incompatible land uses.

However, in order to maintain the credibility of our AICUZ Program, it must be continually refined as the state of the art of noise analysis changes. Also, we have determined a need for continued research on the impact of noise on humans and on wild and domestic animals. A general consensus on the impact of noise and resulting land use guidelines were published in June 1980 as a result of a Federal Interagency Committee action. The document, entitled "Guidelines for Considering Noise in Land Use Planning and Control," summarizes various Federal agencies' policies and guidance on considering noise impact in land use planning. This is a good start, but much work remains. For example, whenever the Air Force proposes a change to its flying activities, an analysis of the noise impact associated with the change is made. Part of this analysis includes a determination of the impact of the noise generated by the proposed action on the affected area. We must be sure we consistently interpret the impact of the noise levels and that our analysis is supported by current research and development work.

In addition to the detailed analysis of noise impact resulting from activities at our air bases, we must also analyze the impact of aircraft noise in our military operating areas and along military training routes. At times supersonic speeds are reached in these activities, so we see a need for additional research into the effects of sonic booms.

In response to three other questions presented:

1. The aircraft noise problem does have community-wide impact. The impact could be in the form of land use limitations if zoning restrictions are in effect or if there are complaints and controversies over continued use of an airfield.
2. The noise problem does impede the air transportation system through limited routes, limits on flying hours, and limits on operational changes that could make the overall system more effective.
3. The information needed for better decision making is a better understanding of the impact, both psychological and medical, of noise.

The Air Force has identified several areas related to the aircraft noise problem that need detailed analysis. Some are:

1. Continue to update the acoustic data file of the NOISEMAP Program;
2. Update the NOISEMAP computer program which predicts noise levels of air operations;

3. Establish procedures to do a more effective job of dealing with noise compliance (i.e. recording, analyzing, responding);
4. Identify and accurately assess the impact of noise on humans and animals;
5. Determine the effectiveness of noise suppressors, hush houses, and barriers in limiting noise levels;
6. Develop a better definition of activities that are compatible with various noise levels.

I appreciate the opportunity to observe and discuss the activities of NASA Langley and look forward to the dialogue with the other workshop participants.

Captain James L. McLaughlin, Airline Pilots Association: ALPA represents pilots of most of the major airlines in the United States and is therefore pleased to be invited to this workshop by NASA. We are well aware of aircraft noise and its effects, not only on the communities around our nation's airports, but on the air carriers as well. We believe every airport has a noise problem; some just haven't been publicized as much as others. But what we are most concerned about is the tendency to try to reduce noise by operational methods that are questionable in their effects and potentially unsafe in their usage. We feel operational ways of reducing noise are essentially fully developed in today's fleet, with only "fine tuning" left as small noise adjustments are still available. We feel certain safety criteria should be applied and enforced nationally, both on runway usage for noise abatement and on noise abatement take-off procedures. Without these criteria, potentially unsafe operating procedures will be designed by local authorities unfamiliar with aircraft operations. Their only concern is noise. We are concerned about noise and also about safety. We are ultimately responsible for the safety not only of flight, but of all those involved with this noise issue, and we are generally the only ones who fly in the aircraft performing these noise abatement maneuvers. If we're expected to continually "do something" to abate noise, we will try. But let's flip the coin and see if the communities on the ground can't do something also, something like responsible land use planning, zoning, and buyer awareness programs for those areas impacted by noise. Thank you for inviting us to attend this forum and be heard.

J. Donald Collier, Director, Environmental Affairs, Air Transportation Association: I am the Director of Environmental Affairs of the Air Transport Association of America, which represents virtually all of the nation's scheduled airlines. My comments today will be brief, and I will attempt to respond directly to the queries posed in Mr. Morgan's letter of invitation.

First, is there a noise problem at airports? This may seem to be a trivial question, because if the answer is "No," my comments would be brief indeed! But the answer is obviously "Yes" if the quantity of ink and paper devoted to aviation noise over two decades is any indication. The more penetrating question might be "Is the noise problem of the 1980's (a) a public relations problem, (b) an economic

problem, (c) an aircraft problem, (d) an engine problem, (e) an airline problem, (f) an airport problem, (g) a federal transportation system problem, (h) a land use problem, or (i) none of the above?"

Second, how does noise affect the airport and the community? Well, the airport is, for one thing, a place of employment subject to workplace noise standards. Any noise "problems" are solved by proper use of ear plugs or muffs. The airport is also a transportation depot where passengers encounter brief exposures to aircraft noise that usually is well muffled by the terminal structure. There is no evidence of any significant problems in this respect. As to the community, airport noise is best characterized as an irritant. Researchers have repeatedly attempted to correlate airport noise with various medical or social maladies. They principally found that airport noise is not a primary causal factor. At worst, noise is an aggravation to causal factors over which nobody has effective control other than the exposed individuals. We sometimes feel that aviation is being made the scapegoat for the other causal factors.

Next item: "Does noise impede the air transportation system?" We think so. Since the enactment in 1970 of the Environmental Protection Act, the growth in airport capacity has been brought to a virtual standstill. Many airports are even reducing capacity today through curfews, runway use restrictions, aircraft type restrictions, and other locally imposed initiatives. The proper development of reliever airports is about the only hope we have today for capacity gains under current circumstances. If we are to have a national air transportation system, environmental planning must be developed by the national agency responsible for that system, and the erosive local initiatives must submit.

What abatement alternatives are available to us? The airlines have already accomplished or set in motion those alternatives available to them, principally the adoption of noise abatement operating procedure and the acquisition of new-technology engines and aircraft. Many people are of the opinion that there are gains yet to be made in locally tailored flight procedures, but this position fails to appreciate the commanding need for pilots to use standardized procedures for all airports. On the new-technology front, airlines are hungrily awaiting quiet new jets that also offer efficiency gains. We think these new aircraft, once their numbers dominate the fleet, will relieve noise such that other local use restrictions can be removed. Of course, the speed of fleet replacement is impacted by the economic climate in the industry.

A third alternative - not a noise reduction alternative, but a reduction of the nuisance effect of noise - lies in the public relations field. Psychologists remind us that "noise is in the ear of the beholder;" thus, people who like aviation for its aesthetic qualities or for the economic benefits it brings will be less irritated by aviation noise than those who do not appreciate those benefits. Airlines, therefore, are persevering in their efforts to turn back the hostile attitude fostered by overzealous environmentalists and keep community leaders and the public well informed of the benefits of aviation.

Next item: What information is needed for better decision making? Who would use it and how? For starters, airport planners need to know when aviation

noise is and is not a local issue. We have seen the ANCLUC process, for example, create noise problems where none existed. In such cases, the overzealous and sometimes incompetent investigator twists the public's psychological perception of the costs and benefits of aviation, a needless interference that benefits nobody, least of all the airport neighbor.

Another information need, one which NASA might assist in filling, is a method for measuring noise irritation to individuals. Current methods appear to be adequate to guide long-range airport planning efforts. Methods also exist for describing thresholds of physiological damage, but nothing satisfactorily guides the courts, the regulators, the planners, the airport managers, the airport users, the insurers, and the public on the matter of when and by how much an aviation party incurs a noise liability vis-a-vis the airport neighbor.

As I've said, these comments are brief. We look forward to expanding them as appropriate in the work sessions.

Richard J. Linn, American Airlines: I fully agree with what FAA is trying to do according to Mr. Helms' address at the University Air Law Symposium.

I don't think there is anyone in the airline business who would not agree that there is and has been a serious noise problem; however, the seeds for the majority of the cure for that problem have already been planted. In my travels and discussions with some of the community groups, there is no doubt that Stage III airplanes, such as the DC-10, DC-9-80 and A-300B, are coming on line and are bringing a noticeable, measurable improvement in the noise environment at the airports. Our problem is that we can't get these airplanes on line fast enough. We think that the retirement of airplanes such as the 707 (58 being grounded in the last year) represents actions that are bringing a noticeable reduction to the noise impact in the community. The technology is available to bring a solution satisfactory to most of the community. When we get to the point where there is a 100-percent Stage III operation, undoubtedly small portions of the community will still experience a small impact. I feel that somewhere along the line, someone is going to have to say, "Folks, this is it; this is the best we can do; there is no more; and you either live with it, or move."

The reaction of people who have been exposed to Stage III aircraft has been fantastic. I think the public's reaction in California to the DC-9-80 is well documented as being very favorable. The technology is there to bring about a tremendous reduction in the noise problem. I wish there were more money to increase the fleet of these airplanes. There is no doubt that part of the noise problem is in the reaction of the community leaders and their lack of effective land planning. We still see in parts of the country, in footprint areas that are deemed to be noisy, new private home construction; therefore, part of the problem lies with the city fathers. They are not doing their jobs. The only solution to the problem is that everyone has to do a fair share.

From an American Airlines point of view, and certainly from an A-21 Committee point of view, we would continue to support the efforts of NASA Langley to try and understand the dose/response relationships. Also, let's see if we can determine a better way of doing some of this footprinting so we can stop some of the arguments over the technical aspects of methodology and the research that should be done to perfect time-of-day weighting.

James P. Muldoon, The Port Authority of New York and New Jersey: One of my principal responsibilities is the management of the aircraft noise abatement programs conducted by the Port Authority. In its 1976 noise policy statement, the FAA estimated there were over 2 million people around our airports who were impacted by aircraft noise, that is, residing within the NEF contour equivalent to  $L_{dn}$  65. Our current studies indicate that by the year 1990 the number will, perhaps, be reduced by one-half. These studies are based on a fleet forecast that calls for 100 percent FAR-36 aircraft, in accordance with the federal timetable. Our forecasts also assume a reasonable percentage of Stage III aircraft; however, certainly not the total Stage III environment that Dick Linn just mentioned. On that score, I do not believe that too many of us here will live to see 100 percent Stage III fleet at any major airport.

Large numbers of people are still going to be impacted by noise, and our point of view is that the only way to deliver any additional relief is through flight procedural means. The Port Authority is proposing a new noise monitoring system at the three metropolitan airports which will analyze flight tracks with the concomitant noise levels under and adjacent to the flight tracks. The system will permit analyses and value judgments to be made on the degree of conformance of abatement procedures. The system will permit existing procedures to be improved and new procedures to be evaluated. We do not see much more that can be done at major noise-impacted airports without adversely affecting the air transportation system, and to that extent we continue to support the research of NASA and others engaged in the field.

Thomas N. Duffy, Executive Director, National Organization to Insure a Sound-Controlled Environment (NOISE): The membership of the NOISE organization is composed of representatives from the local governments of smaller cities and counties whose residents are involuntary noise consumers. These localities include, for instance, Inglewood near Los Angeles International Airport, College Park and Forest Park in Atlanta, Schiller Park near O'Hare, and Nassau County near JFK International. NOISE and its members are bothered by aviation noise. We do not condemn aviation; we are only trying to soften the impact of aviation noise on people.

Most definitions of the noise problem can be characterized as secondary definitions. Noise is not an operator problem, either for the aircraft pilot or for the airport operator. It is not a legal or regulatory problem, nor is it a manufacturer problem. Noise is a people problem. If noise did not impact on people's ears and nervous systems, none of the other groups mentioned here would have to worry about it. As a mayor or city councilman in one of these affected localities, you're going to be upset when those people come to you and ask, "Why are they doing that to us, and what are you doing to stop it?" You're going to have to do something (1) to make sure that this problem is recognized, and (2) to reduce the problem.

As it turns out, the noise problem is being reduced, at least in part, by other considerations. Fuel-efficient engines also happen to be very quiet engines;



thus OPEC has become the biggest ally that noise organizations have. NOISE and the noise consumer are taking more and more steps to solve the aviation noise problem. The organization will approve of and support almost any effort toward this end. We would like to see operational and technology changes that cut down on noise, and in some cases our members have resorted to legal solutions to noise problems. Many localities are planning solutions that are effective and that can work. It is interesting to note, however, that the public relations aspect of the noise problem has been largely ignored. Simply going out into a community and saying, "We care, we're trying to do something about it, and we'll be talking to you about it," can have a significant impact on people. If you show people that you care, they don't feel as badly or as aggrieved about what is being done to them.

Leo F. Duggan, Airport Operators Council International: The membership of the Airport Operators Council International (AOCI) is made up of representatives from 190 public-owned airports. These airports are owned by a municipality, county, state, or port authority. Public-owned airports are not profit-oriented; rather, they have a mission to provide a service to the community. Recently the Administrator to the FAA, Mr. Helms, has given presentations that touch upon two of the most serious problems facing airport operations - capacity and delay, and environmental issues.

On January 22, 1982, Mr. Helms introduced to the aviation community the FAA's new National Airspace System Plan. In brief, he said that there is adequate airspace to accommodate forecasted traffic if this system plan is funded and implemented. He noted that the weak link in the air transportation system is the airport; more runways are needed to accommodate projected growth. Airport operators concur in this observation and regret that the system plan does not suggest evaluation or research and development steps, nor does it supply funding to correct the deficiencies.

Mr. Helms addressed the second critical problem facing airport authorities in a presentation given before the Aviation Attorneys Conference at Southern Methodist University. The subject of his presentation was aircraft noise and curfews because of their constraints on international commerce, and expressed his view that noise abatement procedures such as reducing power on take off are a trade-off between noise and safety. He called California's noise standards unrealistic, and stated that the FAA will take whatever steps are necessary to prevent such interference with the national transportation system.

AOCI, as an association of airports, strongly supports the position that the airport operator has the proprietary right to run his airport as he sees fit, but at the same time the organization recognizes that safety cannot be compromised. This makes our position somewhat ambiguous; on one hand, we are saying that the airport has the right to establish noise abatement procedures, including curfews, but on the other hand we do not favor curfews because of their effect on national and international commerce. The present situation at Westchester Airport illustrates this point.

Great strides have been made in the last decade in reducing noise at the source, but we in the industry realize that there is a limit to noise reduction in the aircraft. Some arrangement will have to be made to inform the community that a limit has been reached. Public relations can play a major role in this task.

In the late 1940's, Midway Airport was the busiest airport in the country. When the immediate community complained about the noise, it was decided to shift operations to O'Hare International Airport. O'Hare then became the busy airport that Midway had been, and the business community at Midway evaporated. It was an economic disaster for the area, and the communities then concluded that noise had not been as big a problem as they had thought.

O'Hare is a major employer in Cook County, Miami International is a major employer in Dade County, and Kennedy International is the largest employer on Long Island. These and most other airports which are responsible for noise problems pour millions of dollars into local economies. Airports are a source of noise, but they also lend tremendously to the vitality of the economy of the community. We must communicate that to the people who need to know.

Robert E. Pendley, Douglas Aircraft Company: I am with the Douglas Aircraft Company, where I direct the Acoustics Engineering Group. This group is responsible for developing the design of the noise control features in our airplanes. The group also provides data for operators of our equipment to assist them in determining how best to operate their airplanes at airports with noise exposure problems. We are concerned with several aspects of the airport noise problem. First, we would like to be confident that the design measures we apply in our airplanes and the airport noise data we furnish operators can lead to the least practicable disturbance of communities near airports. We are not confident that present aircraft noise and airport noise metrics guide us as well as they should toward that objective.

Second, we encounter several problems in our efforts to design efficient airplanes that can comply with growing airport noise restrictions. At some airports, existing and proposed noise limitations are expressed in terms of single-event noise level limits and/or cumulative noise exposure limitations. These limits are so stringent in some cases that we are unable, through the limitations of present and foreseen aircraft and acoustics technologies, to provide airplanes capable of complying with the noise limits while simultaneously satisfying economically the full spectrum of capacity, range, and flight frequencies needed to properly service the airports. That part of the passenger and freight traffic turned away from an otherwise satisfactory airport must be transported on the ground to more distant airports. This reduces the accessibility and overall economy of air transportation.

Third, curfews are applied at some airports irrespective of airplane noise level. Needed air transportation services are completely curtailed through the independent effects of curfews at specific airports and through mutually exclusive effects of curfews at city pairs in different time zones.

Finally, we are concerned with the severe resistance airport authorities experience in seeking approvals for the siting of new airports or for runway improvements needed to accommodate traffic demand. We suspect that much of the resistance is unreasonable, attributable perhaps to a lack of public confidence in the noise metrics being used in the definition of noise impact area.